

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF

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FOR LETTERS PATENT OF THE UNITED STATES

FOR

FIBERBOARD PALLET

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FIBERBOARD PALLET

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] The present application claims the benefit of U.S. Provisional Application No. 60/458,120, filed March 26, 2003, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

[002] The present invention relates to pallets, and, more particularly, to pallets having improved structural supports suitable for use with various materials.

2. DESCRIPTION OF RELATED ART

[003] Pallets are typically flat, rectangular or square shaped surfaces that are used to transport goods. Currently available pallets are made from wood, paper, fiberboard, various plastics and other substances. A typical industry standard pallet is rectangular in shape and measures 48 inches by 40 inches.

[004] One of the problems associated with the currently available pallets are the strict exportation regulations required of such packing materials. For example, wood packing materials, including wood pallets currently are required to be kiln-dried or chemically impregnated with a preservative. Documentation is required to certify that wood packing materials, including wood pallets, are acceptable for exportation. These strict exportation regulations increase the costs associated with manufacturing wood pallets and creates a risk that the product, upon importation to a country, will be destroyed for failing to comply with the exportation regulations.

[005] Another problem associated with the currently available pallets, and a further problem associated with the exportation regulations, is the high cost of pallets that are exempt from the wood packing exportation regulations. Corrugated and plastic pallets are exempt from

the wood packing exportation regulations; however, these exempt pallets can be expensive to manufacture. For example, pallets made completely from plastic can cost approximately \$50 each. Additionally, pallets are typically not returned to the exporting company, which means that a high-cost pallet can greatly increase the cost of the product being exported.

[006] Thus, there exists a need to provide a load-supporting pallet having an improved structural support suitable for use with various materials and that be constructed and assembled from relatively lightweight, durable materials, which are relatively inexpensive to manufacture.

SUMMARY OF THE INVENTION

[007] The present invention satisfies the foregoing and other needs. In one embodiment, the structural support of the present invention supports fiberboard, wood, plastic or other suitable planks and deck members, which preferably are relatively lightweight and which are relatively inexpensive to manufacture.

[008] In accordance with one embodiment of the present invention, the pallet includes a load supporting deck comprised of deck members, and runners attached to the bottom of the load supporting deck, which are comprised of structural supports supporting, in two planes, a plank. The structural support of the present invention includes a supporting wall, which has a top support surface and a side surface, and a base support wall connected to the supporting wall and which extends beyond the width of the supporting wall and extends below the height of the supporting wall, such that the supporting wall and base support wall define a plank supporting edge for supporting a plank.

BRIEF DESCRIPTION OF THE DRAWINGS

[009] The particular features and advantages of the invention as well as other objects will become apparent from the following description taken in connection with the accompanying drawings, in which:

[0010] FIG. 1 is a three-dimensional top view illustrating a pallet incorporating a structural support in accordance with one embodiment of the present invention;

[0011] FIG. 2 is a three-dimensional top view illustrating a structural support that may be used in an embodiment of the present invention;

[0012] FIG. 3 is an side elevation view illustrating a durable structural support that may be used in an embodiment of the present invention.

[0013] FIG. 4 is an end elevation view illustrating a durable structural support that may be used in an embodiment of the present invention;

[0014] FIG. 5 is a three-dimensional side view illustrating a plank attached to a structural support that may be used to assemble a runner in accordance with an embodiment of the present invention;

[0015] FIG. 6 is a three-dimensional side view illustrating a second plank being attached to a structural support during assembly of a runner that may be used in an embodiment of the present invention;

[0016] FIG. 7 is a three-dimensional side view illustrating a runner that may be used in an embodiment of the present invention;

[0017] FIG. 8 is a three-dimensional bottom view of a runner that may be used in an embodiment of the present invention; and

[0018] FIG. 9 is a three-dimensional view of a partially assembled bottom deck in accordance with an embodiment of the present invention.

DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0019] Certain exemplary embodiments of the present invention will now be described with reference to the drawings. In general, such embodiments relate to pallets constructed of lightweight, durable materials, and, more particularly, to pallets constructed with lightweight, durable structural supports, which can withstand rough handling and heavy and high impact loads, as well as to support members suitable for use in these and other pallets.

[0020] Turning to FIG. 1 pallet 10 includes a plurality of longitudinally extending top deck members 12 supported by runners 20. Runners 20 typically include one or more planks 30, which extend longitudinally in a non-parallel direction with respect to deck members 12. Planks 30 typically rest upon one or more structural supports 40 (shown in FIGS. 2, 3 and 4), the bottom surfaces of which are attached to bottom deck members 18 in a non-parallel direction with respect to runners 20. While the majority of pallets rectangular, measuring 48 inches by 40 inches, the present invention can be used to form pallets of any size and shape. For example, a pallet could be a square or another polygon having rail supports along one or more of the edges, or elsewhere. The present invention can be used with any kind of pallet, including those disclosed in U.S. Patent Nos. 5,067,418; 5,272,990; 5,816,172; 6,012,399; D419,275 and D419,774, which are herein incorporated by reference.

[0021] As shown in FIG. 2, structural support member 40 has a generally inverted T-shaped profile and includes supporting walls 42, base support walls 44, bottom surface 46 and top surfaces 48. Structural support 40 also includes a plank supporting edge 50 and a side wall 54 for supporting the planks 30.

[0022] Structural support 40 can be made from any durable lightweight material that is capable of withstanding the required loads, such as, for example, high density polypropylene (HDPP), polyethylene terephthalate (PET), and wood. Structural support 40 can be molded in any manner known in the art, including, for example, having a gate located on bottom surface 46, which connects the left and right sides of structural support 40. In one embodiment, structural support 40 is produced by injection molding a high density polypropylene compound. In the embodiment depicted in FIG. 2, structural support 40 has a hollow interior. However, other embodiments may include differently configured interior portions and solid interiors. FIG. 3 depicts a front wall 42 view of structural support 40, while FIG. 4 depicts a side view of structural support 40.

[0023] As will be appreciated by those skilled in the art, structural support 40 of the present embodiment provides added stability and durability by supporting at least two surfaces of the planks 30, one surface contacting plank supporting edge 50 and another surface contacting side wall 54. Furthermore, because structural support 40 is supported on all sides (i.e., by planks 30 on each side, and top deck member 12 on the top and bottom deck member 18 on the bottom), and includes plank supporting edges 50, which planks 30 engage, the structural support 40 is resistant to rotation, adding additional stability and durability.

[0024] The dimensions of structural support 40 can be varied as desired to provide structural supports 40 that properly attach planks 30 and top deck members 12 and bottom deck members 18, to thereby form a pallet 10 that can withstand the applied loads. It should be understood that the dimensions and proportions shown in FIGS. 2, 3 and 4 are provided for purposes of illustration only, and do not limit the invention to any particular dimensions or

portions. In a preferred embodiment, with reference to FIGS. 3 and 4, structural support 40 has a height (H) of 4", width (W) of 3" and depth (D) of 5".

[0025] Furthermore, other configurations for structural support 40 are possible while staying within the scope of the present invention. For example, structural support 40 can be solid. Structural support can also be made with only one plank supporting edge 50 and one side wall 54, i.e., having an L-shaped profile, such that only one plank 30 is supported by edge 50 of structural support 40 and, optionally, another plank supported by the opposite wall. Structural support 40 can also be inverted, such that planks 30 engage the bottom deck members rather than top deck members.

[0026] Planks 30 may be made from any material that is suitable for use in a pallet, such as, for example, wood, paper, medium density fiberboard and plastic, and it is not required for all planks 30 to be made from the same material in order to form pallet 10. In one embodiment, plank 30 is made from a laminate. In another embodiment, one or more planks 30 may be fiberboard laminates, such as those manufactured by the BCI division of the Newark Group Inc., Cranford, New Jersey under the trademark NEWPLANXS.

[0027] Plank 30, top deck members 12, bottom deck members 18 and/or structural supports 40 may be designed to exhibit one or more qualities that are desirable for pallets or to provide qualities that will enhance the performance of a pallet that may be used for ordinary or special purposes. For example, in one embodiment, plank 30 has the size and shape used to build a standard size pallet, such as those that are currently made from wood and/or other known pallet materials. In another embodiment, plank 30 is made water resistant through any of a number of known processes, such as being laminated or chemically treated. In yet another embodiment, plank 30 has sufficient hardness to withstand one or more particular loading

conditions. Plank 30 may also be designed such that it can be manufactured using conventional pallet building tools.

[0028] The construction process of runners 20 of pallet 10 are shown in FIGS. 5, 6, 7 and 8. As depicted in FIG. 5, one or more runners 20 can be assembled by attaching a plank 30 to a first side of structural support 40 at plank supporting edge 50. Any suitable fastener can be used to attach planks 30 to support member 40 including, for example, slotted portions, protrusions or other mating surfaces in planks 30 and/or structural supports 40, staples, nails, screws, adhesives and any other known fastening or securing mechanism. Additionally, planks 30 can have any desired lengths and widths. A second plank 30 can be attached to a second side of structural support 40 as shown in FIGS. 6 - 8.

[0029] Runners 20 may be provided in any size by cutting planks 30 to appropriate lengths and adjusting the location and/or number of structural supports 40. In one embodiment, a plurality of structural supports 40 are used with each of the one or more runners 20. By way of example, a standard size pallet can be formed using runners with 48" planks 30 and three structural supports 40. Standard size pallets may also use fewer or more than three structural supports per runner 20.

[0030] Pallet 10 can include a bottom deck 14 (illustrated in FIG. 9) and/or a top deck 16 (illustrated in FIG. 1). As depicted in FIG. 9, runners 20 for a single pallet 10 can be positioned so that structural support 40 of runner 20 aligns with the corresponding structural supports 40 of different runners 20. The number and distance (D) between runners 20 can vary and should be determined based upon the load the will be supported by pallet 10 and based upon other desirable features, for example, runners 20 can be spaced to permit the insertion of the tines of a pallet jack. One or more bottom deck members 18 can attach to bottom surfaces 46 of structural

supports 40 in a non-parallel direction with respect to the longitudinal axis of runners 20 and can form bottom deck 14. In one embodiment, bottom deck members 18 can be attached to structural supports 40 in a direction perpendicular to the longitudinal axis of runners 20. The bottom deck may also include members attached to the bottom of planks 30.

[0031] Assembled bottom deck 14 and attached runners 20 can then be rotated or otherwise adjusted to facilitate assembly of top deck 16. In one embodiment, top deck members 12 are attached to top surfaces 48 of structural supports 40 and in one embodiment, the direction of attachment of top deck members 12 to top surfaces 48 is a direction perpendicular to that of the longitudinal axis of runner 20. For top deck 16, deck members 12 may be attached to a plurality of runners 20 at top surfaces 48 of the aligned structural supports 40. The number of bottom deck members 18 and top deck members 12 used to form bottom deck 14 and top deck 16, respectively, may or may not be the same, depending upon the manner in which pallet 10 will be used, and the number of deck members used to form either bottom deck 14 or top deck 16 may exceed that of the other deck. In one embodiment, top deck 16 includes seven top deck members 12 and bottom deck 14 includes three bottom deck members 18.

[0032] Once assembled, pallet 10 will have the capabilities of other pallets and may be used to transport goods and perform the other tasks for which pallets are used. An assembled pallet may be capable of receiving a forklift tine and may be assembled to facilitate handling from all sides.

[0033] It is to be understood that certain changes may be made in the above structures and construction without departing from the spirit and scope of the invention. It is also intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

[0034] Those skilled in the art will recognize that the apparatus of the present invention has many applications, may be implemented in many manners and, as such, is not to be limited by the foregoing exemplary embodiments and examples. In this regard, any number of the features of the different embodiments described herein may be combined into one single embodiment. Moreover, the scope of the present invention covers conventionally known and future developed variations and modifications to the apparatus described herein, as would be understood by those skilled in the art.